

COMPETITOR 130 - OPERATING INSTRUCTIONS

The Competitor 130 is delivered in one of three possible configurations:-

1. Mounted on a tracked power-carrier
2. Mounted on a custom-built trailer with power pack
3. As a stand-alone unit with separate power pack

MOBILIZATION OF THE RIG

1. Tracked Unit

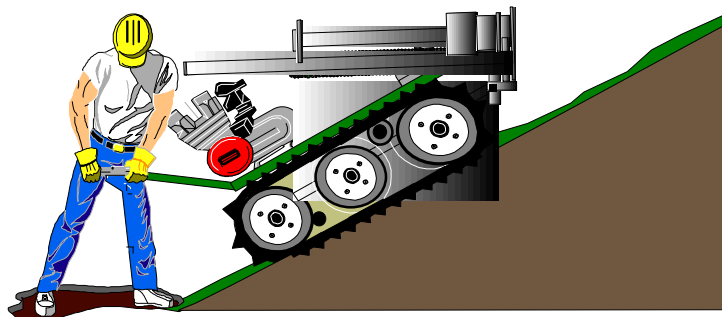
The rig is delivered mounted on the tracked power-carrier in transportation mode. The rig will be in the horizontal position and at the top of the mast will be attached to the frame with a securing pin. The unit can be safely maneuvered in this position.

Operators should read the separate manual that relates to the tracked power-carrier unit, become familiar with the controls and observe all safety instructions.

To mobilize the unit the engine should be started and the revs set at just over tickover. At the rear of the unit move the drive lever (red) to the forward position, then lift both levers on the handlebars (the top levers). The unit will move forward. The red lever controls the speed and direction. To move the unit to the right, lift the lower right hand handlebar lever; to go to the left lift the left handlebar lever.

**Slopes should be negotiated
With the front end facing
uphill at all times.**

**Always keep sides of
the unit clear when tracking**



Care must be taken when driving the unit over uneven ground conditions - make sure that the area to the sides of the unit is clear of personnel. Should the unit become unstable it could tip on one side. Slopes and embankments up to 1 in 3 should be negotiated with the front of the rig facing uphill all the times, when both ascending and descending the slope.

Position the unit over the borehole position. Reduce the engine revs to tickover, this will slow down the speed whilst the rig is being positioned. Remove the securing pin at the top of the mast assembly. Move to the left-hand side of the power-carrier where the control panel is located. Slowly pull forward the black hydraulic lever; and a ram on the power carrier will slowly lift the mast to the vertical position.



Screw down the front legs onto the load bearing plates so that the rig is level and mast vertical. This is very important to ensure that the rig is stable. Also note that tools may become stuck fast in a bore hole if the mast deviates significantly from the vertical position. The rig is now ready to begin sampling.



When moving the rig between different bore hole locations return the unit to the transportation mode as described above. Remember to secure the mast to the frame of the power-carrier and secure the weight with the retaining pins provided.

2. Trailer-mounted Unit

The rig is delivered mounted on the trailer in transportation mode. The rig is in the horizontal position and at the top of the mast is attached to a support post at the front of the trailer by means a securing pin. The rear leg of the rig is also secured to the trailer by a securing pin. The hydraulic power pack is mounted on four pegs projecting from the floor of the trailer and secured by a pin. The trailer can be safely maneuvered in this position.



The trailer is unbraked and the maximum weight should not exceed 750 kg when fully loaded. Although a lockable toolbox is provided on the trailer this is intended only for essential spares, stabilizing legs and load bearing plates. It should not be overloaded with drilling tools or the trailer will become unsafe.

The trailer should be positioned so that the rig can swing down from the back into drilling position over the bore hole location.

To raise the mast first loop the winch strap around the mast and lock the winch so that it can take the weight of the rig. Remove the securing pin located on the rear leg of the rig. Now remove the securing pin from the support pole letting the winch strap take the strain. Unwind the winch allowing the rig to stand in the vertical position.



If the trailer has been uncoupled from the vehicle you will need to counterbalance the front of the trailer when raising the mast. Otherwise the trailer will tip backwards.

Take care to position the rig so that the mast stands vertical, and is not held out of position by the trailer. You can do this by manually pulling the mast into the vertical position.

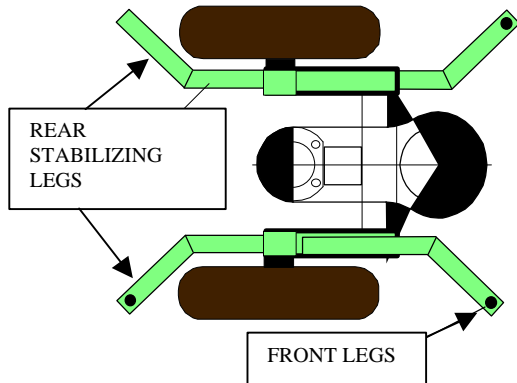
The four legs provided should now be slotted into the base of the rig and secured with pins. Using steel load-bearing plates under each leg, screw down the legs to level the rig.



It is important to ensure that the rig is level and mast vertical prior to sampling, thus ensuring that the rig is stable. Also note that tools may become stuck fast in a borehole if the mast deviates significantly from the vertical position. The rig is now ready to begin sampling.

3. Stand-alone Unit

The rig is delivered with a jockey wheel attached to the mast. Carefully, move the rig to the bore hole position, stand it upright and remove the jockey wheel. Fit the front and rear legs and screw the jacks down onto the load-bearing plates to level the rig.



IMPORTANT SAFETY NOTE:

For stability ensure that front and rear legs are fitted and that the mast is vertical before unit is used in stand-alone mode.

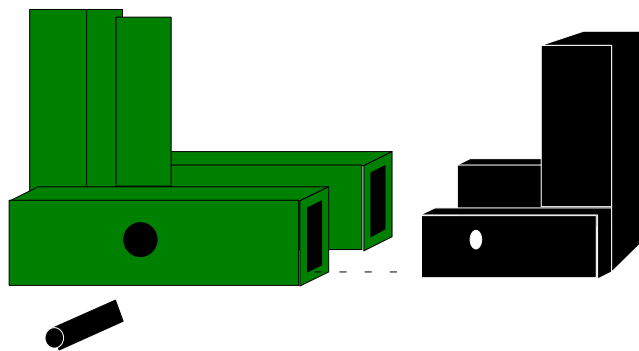
Place the hydraulic power pack at a distance of approximately 2 metres from the rig, on the opposite side to the drop weight. Fit the hydraulic hoses onto the power pack.

USING THE RIG IN STAND-ALONE MODE

The rig can be disconnected from the tracked power-carrier or trailer and used in stand-alone mode when necessary. To disconnect the rig, first stand it upright in the drilling position. Disconnect all the hydraulic hoses from the valve block on the control panel and secure them to the rig.

Remove the two locking pins at the base and to the rear of the rig (where the rig locates onto the power-carrier/trailer frame). After removing the locking pins the rig can be pulled free.

Remove the locking pins and pull the rig free.



It is important to fit rear stabilizing legs when using the rig in stand-alone mode otherwise the unit will become unstable.

WEIGHT CONFIGURATIONS

The drop weight and drop height are variable to enable either Standard Penetration Test (SPT) or Dynamic Probing (DP) to be undertaken. The rig is delivered to you in the SPT configuration.

FIG 1 SPT, SHDP, General Sampling

This configuration is for SPT, Super-heavy Dynamic Probing and for general soil sampling. This utilizes a 63.5 kg weight with a drop height of 760mm. The weight assembly is complete with two side plates fitted and with the lifting forks at the base of the weight block

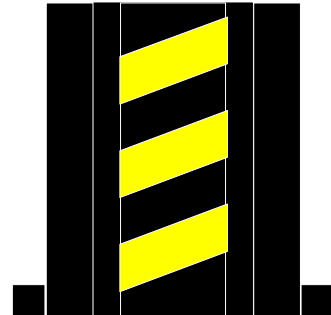
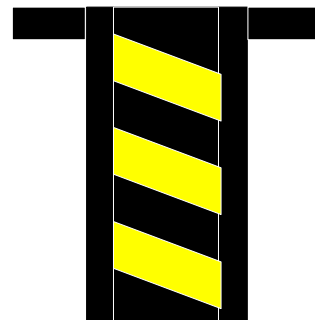


FIG 2 Heavy dynamic probing

Fig. 2 shows the position needed for Dynamic Probing. This configuration utilizes a 50kg drop weight with a 500mm drop height.

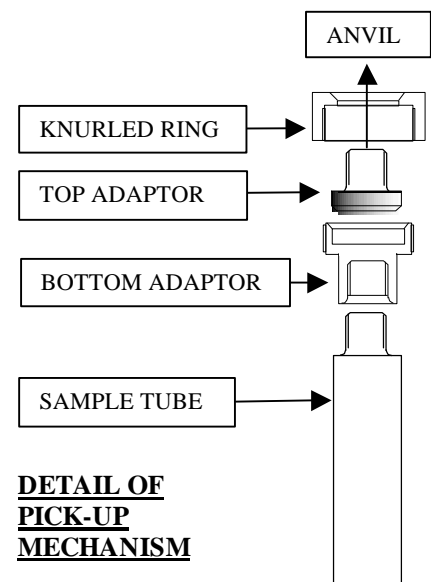


To adjust the weight for Dynamic Probing it is necessary to remove the two side plates by simply removing the central bolt. The weight then should be inverted so the lifting forks are at the top position. To do this the safety rubber bung situated at the top of the carriage assembly needs to be removed. The weight is then slid out from the top of the slide (channel section) and inverted. Finally replace the rubber safety bung at the top of the slide.

STANDARD SAMPLING PROCEDURE

Prior to sampling remove the retaining pin that is securing the drop weight. On the control panel, pull the green hydraulic lever forward so that the carriage assembly begins to slide up the mast. Lift the carriage to the maximum height. You are now ready to attach a sample tube.

Study the pick-up mechanism under the anvil (shown right). This consists of three components: knurled ring, top adaptor, and bottom adaptor. Attach a sample tube to the bottom adaptor and screw down the knurled ring to secure it in place.



Now position the hydraulic ram so the carriage assembly is sitting on top of the sampler, with the sampler shoe resting on the ground.

Fully lower the hydraulic ram to the lowest position by pushing the green lever backwards.



It is important to ensure that the ram is lowered before sampling begins, otherwise the force of the weight will act on the hydraulic cylinder instead of on the sample tube, possibly causing damage to the ram.



You are now ready to commence sampling. Remember to wear ear protectors when the drop weight is hammering. It is important that the area around the drop weight is clear of all personnel whilst sampling is in progress. There is a safety zone around the drop weight extending to 2 meters in all directions. This area must be clear at all times.

Depress the yellow and black lever to start the drop weight. Stand clear until the sampler has been driven fully into the ground and then stop the drop weight. The drop weight must always be stopped at the bottom position (i.e. resting on the anvil).



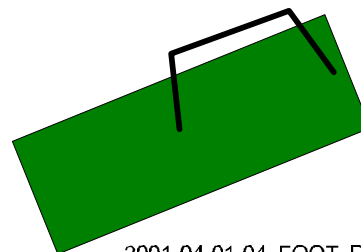
Once the sample tube has been driven all the way into the ground it can be jacked out. Check that the front legs are firmly screwed onto the load-bearing plates. Ensure the area to the front of the rig is clear of all personnel.

You can now raise the carriage assembly using the hydraulic cylinder, which will pull the attached sample tube out from the ground.

If the sample tube is tight it may be necessary to increase the engine speed to provide additional power to the hydraulic jack. Extreme care must be taken during jacking out as the hydraulic ram can generate up to 7 tonnes of pulling force. Operators and other personnel should stand clear of the front of the rig.

Lift the carriage assembly to the highest position and slide the footplate into the base of the slip bowl under the sample tube shoe. The sampler tube can then be lowered onto the footplate whilst it is uncoupled at the top end.

Sliding the footplate under the sample tube assists the uncoupling process.



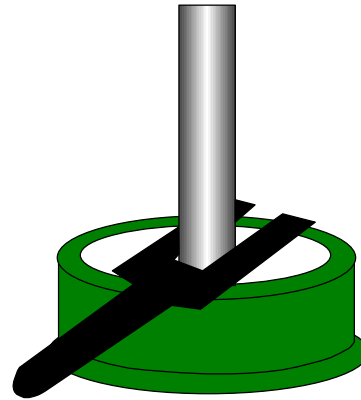
2001-04-01-04 FOOT PLATE

Once the first meter has been sampled you can now repeat the process to sample the second meter. The quickest way to proceed is to select an empty, second sampler tube and drop it down the borehole to rest at 1 metre depth (This can only be done with the second meter). Then connect the first drill rod to the top of the sample tube. The first drill rod is a shorter than the standard 1-metre long rods and is known as the starter rod.

Couple the starter rod to the pick up mechanism. Lower the hydraulic cylinder to its bottom position and commence sampling, maintaining all the safety procedures described above.

When the sample tube has been driven down to two metres below ground level it is then extracted from the borehole using the hydraulic jack. The sample tube is temporarily supported at the top end with a lay key fitted across the sampler sub, to secure it to the slip bowl whilst the drill rods are removed.

Drill rods are secured using the lay key



The above cycle is repeated by fitting additional 1-meter long drill rods until the required depth is reached.

Whilst the rig is driving sample tubes into the ground, the operator can be extracting soil cores from sample tubes already taken, logging them and preparing the next sample tube ready for use. The extraction of soil cores from sample tubes is facilitated by use of Archway "windowless" samplers which incorporate clear plastic liners that retain the core in one piece.

SAFETY ISSUES



Operators should be fully trained in the safe use of the equipment. During the initial training period, operators should be closely supervised until they are completely familiar with the method of operation and all essential safety procedures. Thereafter operators should be monitored and refresher training given as necessary.



A full Risk Assessment should be carried out by the owner/operator and reviewed on a regular basis.



Appropriate Personal Protective Equipment (PPE) must be used at all times during operation of the rig.



A planned Maintenance Schedule should be put in place to ensure that the equipment is at all times in a safe working condition. In particular, the equipment should never be used unless guards and safety devices are in place and in good working order.

IMPORTANT NOTE:

This document is provided for guidance purposes only in order to promote the use of safe working practices when operating the rig. It is not intended that this document should replace any acts, codes, regulations or other documents which have a legal or contractual standing. In particular it must be noted that there is no intention within these guidance notes to negate any of the requirements of the Health & Safety at Work Act 1974, or other relevant safety standards, codes of practice and regulations that may apply in the country of use. It is the responsibility of the owner/operator to ensure that the equipment is maintained in a fit state of repair, that a full risk assessment is carried out and that operators are fully trained in the safe use of the equipment. Archway Engineering (UK) Ltd will not accept any responsibility for any accidents caused as a result of misuse or failure to maintain the equipment in good working order.